

that is compatible with standards that have been adopted by other national and international transportation and standards organizations, including the American Trucking Associations, the International Standards Organization, and the American National Standards Institute.⁴⁶ All of these standards call for local-area AVM technologies. Together, these standards will result in the implementation of AVM systems so that the "seamless" tracking of containers both internationally and domestically, whether carried by ship, rail or truck, will take place through use of the 902-928 MHz band.⁴⁷ This fact, with its important implications for the more efficient transport of goods across the continent, is noted by numerous other commenters, including the American Trucking Associations and American President Companies, a leading member of the intermodal transport industry.⁴⁸

Local-area AVM technologies are used at airports to locate vehicles operating among the terminals and parking lots.⁴⁹ As AMTECH explained in its comments, local-area systems also reduce congestion at airport terminals by monitoring use of the terminal by taxis and other commercial vehicles, and automatically collecting fees for

⁴⁶ *Id.* at 3; *see also* Association of American Railroads, Specification for Application of Automatic Equipment Identification Transponders on Freight Cars, S-917-92 (rev. ed. May 1, 1992); American Trucking Associations, Standard for Automatic Equipment Identification (May 16, 1990); International Standards Organization, ISO 10374 (1991); American National Standards Institute, MH 5.1.9-1990 (Oct. 15, 1990).

⁴⁷ Comments of AAR at 2-3.

⁴⁸ *See* Comments of the ATA at 2; Comments of the APC at 1, 2-3.

⁴⁹ *See* Comments of the Port Authority of New York and New Jersey, PR Docket No. 93-61 at 2 (filed June 29, 1993).

that use.⁵⁰ AMTECH systems are already implemented at a number of the nation's largest airports, including JFK, Los Angeles International Airport, and Dallas-Ft. Worth International Airport. Moreover, the International Air Transport Association has adopted a recommended practice at 902-928 MHz for the tracking of goods transported by air which is compatible with those standards noted earlier.⁵¹

The importance of, and increasing demand for, local-area AVM technologies is made manifest by the number of manufacturers and developers of local-area technology that filed comments.⁵² Emergence of these new competitors and suppliers of local-area systems is striking proof of the growing application of local-area location, monitoring and identification equipment, particularly for state and local governmental agencies. The FCC must ensure that adequate spectrum is available to meet public requirements responsible for this demand.

2. **The FCC should allow licensing of local-area AVM systems throughout the entire 902-928 MHz band.**

All of the comments discussed in the previous section, like the submission of AMTECH, underscore not only the need for spectrum at 902-928 MHz for local-area

⁵⁰ Comments of AMTECH, app. A at A-14; *see also* Comments of the Los Angeles Dept. of Airports, RM No. 80-13 at 1-2 (filed July 23, 1992).

⁵¹ IATA Standard and Recommended Practice RP 1640 (1991).

⁵² *See* Comments of Hughes Aircraft Company, PR Docket No. 93-61 (filed June 29, 1993) ("Comments of Hughes"); Comments of Texas Instruments, Inc./MFS Network Technologies, Inc., RM-8013 (filed June 29, 1993) ("Comments of TI/MFS"); Comments of Mark IV; Comments of AT&T.

systems, but the need for *more* than the 10 MHz spectrum proposed in the *NPRM*. As AMTECH and CALTRANS explained in their comments, in order to meet the 300 kbps data rate specification in the CALTRANS Advanced Toll Collection and Accounting System ("ATCAS"),⁵³ channels 6 MHz wide will be needed.⁵⁴ TI/MFS concurs with AMTECH's appraisal of the spectrum needed to meet the CALTRANS standard, and explains the need for wideband local-area systems to have access to several possible channels in order to ensure reliable operation in light of the "single point of failure phenomenon" in the presence of debilitating interference.⁵⁵ Indeed, in certain circumstances, the need for several reader installations in a single vicinity necessitates enough spectrum to accommodate at least three 6 MHz channels -- a total of at least 18 MHz -- in order to provide reliable service, as AMTECH illustrated in its comments.⁵⁶ A number of other local-area system manufacturers in addition to AMTECH and TI/MFS indicate that they have developed and are developing wideband local-area systems,⁵⁷ further highlighting the need for more spectrum for local-area systems than proposed by the FCC.

⁵³ California Dep't. of Transportation, Dep't. of General Services, RFP DOT-2008, § VI-02 (Jan. 8, 1993).

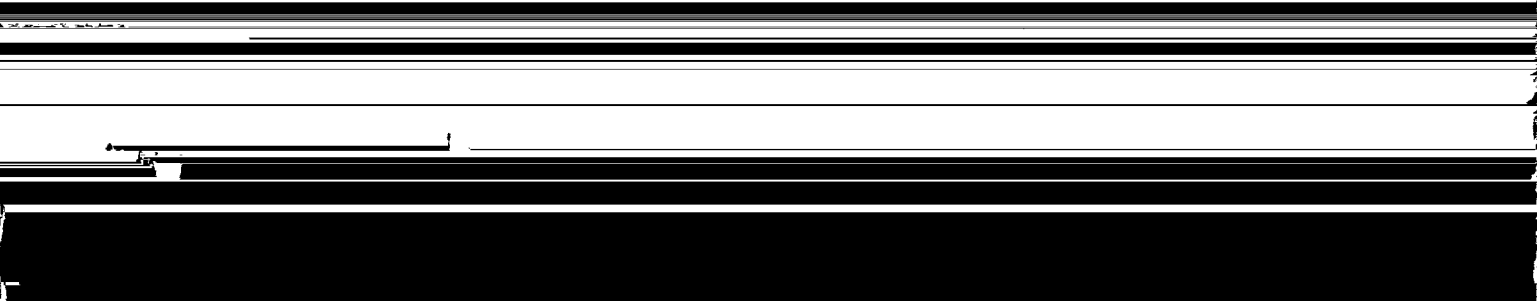
⁵⁴ Comments of AMTECH at 10; Comments of CALTRANS at 6.

⁵⁵ See Comments of TI/MFS at 14-15; *accord* Comments of AMTECH at 10-11.

⁵⁶ Comments of AMTECH at 12.

⁵⁷ See Comments of Mark IV at 1; Comments of Hughes at 1-2; Comments of AT&T at 7.

It is possible that the Commission's proposal stemmed from an inaccurate perception that most current local-area systems are narrowband. But the demand for so-called narrowband local-area systems alone also indicates the need for more than 10 MHz of spectrum for local-area systems. For example, the Interagency Group notes that currently there is demand for AVM systems or electronic and traffic management systems and toll plazas that can discriminate among as many as 20 traffic lanes. In order to do so, 16 or more different frequencies would be needed to accurately assign and record each toll transaction to its proper lane.⁵⁸ Because narrowband local-area readers typically require separation of 1 MHz or more, this indicates a demand for at



of intelligent vehicle highway systems by providing access to essential electronic spectrum and enable public entities to install IVHS as part of their transportation infrastructure. The Committee is concerned that the rules proposed in Docket No. 93-61 may inhibit such development and impede operational tests approved by this Committee. The Committee generally encourages rules that maximize flexibility for users selecting competing AVM systems.⁶⁰

In conclusion, in order to meet the current public demand for important local-area services -- and to allow for future growth, new applications, and the enhancement of technology -- the entire 26 MHz should be made available to local-area technologies pursuant to AMTECH's Plan B.⁶¹

II. PART 15 DEVICES AND THE AMATEUR RADIO COMMUNITY
SHOULD CONTINUE TO ENJOY THEIR CURRENT STATUS
THROUGHOUT THE 902-928 MHz BAND.

The 902-928 MHz band is available to users of unlicensed Part 15 devices and

devices ("ISM"), government radiolocation, and automatic vehicle monitoring.⁶² The *NPRM* proposes to preserve this priority structure, although the Erratum to the *NPRM* asks if additional restrictions should be placed on Part 15 and amateur operations.⁶³ AMTECH believes that the current regulatory status of these users should not change, nor should tighter power limits or other technical restrictions be imposed on them in connection with opening the entire band to AVM.

A number of commenters, representing manufacturers and users of Part 15 devices, on the one hand, and amateur radio operations, on the other, request that the Commission reduce the amount of spectrum made available for AVM and LMS

any service. AT&T has demonstrated the extraordinary susceptibility of PacTel's system to Part 15 interference.⁶⁵ PacTel has already launched aggressive campaigns to drive out *co-primary* AVM licensees, including many AMTECH customers. Part 15 users and the amateurs can expect comparable treatment.

These requests do not reflect that other, more robust AVM technologies, both local-area and wide-area, exist.⁶⁶ AMTECH systems, for example, do not experience interference from Part 15 devices and do not anticipate any, even with the imminent proliferation of such devices as predicted by their proponents. Interference from fixed amateur operations would also be very unlikely. Theoretically, interference could be caused by certain mobile amateur operations, but this, too, is not very probable. Moreover, the amateur community has generally shown that it is self-regulating with a highly credible level of compliance. AMTECH does not believe that systems employing its technologies will cause debilitating interference to Part 15 devices and amateur systems. The inability of one or two more fragile wide-area systems to tolerate interference from these secondary uses should not lead the FCC to back away from its proposal to open the entire 26 MHz of the band. As AMTECH detailed

⁶⁵ See Comments of AT&T, app. A at 1-3.

⁶⁶ A few commenters suggest that because PacTel did not request the opening of the entire 26 MHz of the band, the FCC should not consider doing so. See, e.g., Comments of the ARRL at 5-6. The record developed in response to the PacTel petition and the *NPRM* makes clear the need to open the entire band for AVM services. PacTel hardly speaks for the entire AVM community, which, as the record demonstrates, overwhelmingly demonstrates the public interest benefits from opening the entire band. In any event, the agency is surely not bound by PacTel's request in determining the scope of its proposed rules, or, more importantly, the regulations the FCC adopts. Finally, although AMTECH disagrees with much of PacTel's comments, PacTel does acknowledge a need to open the entire 902-928 MHz band to LMS.

earlier, local-area systems require access to the entire band to continue to provide the plethora of public interest benefits that have already or are soon to be realized. The more proper approach, as AMTECH suggested in its comments, is to require AVM and LMS systems to exhibit a certain degree of robustness.

From AMTECH's perspective, therefore, the regulatory status of Part 15 devices and the amateurs should not change. Other AVM system developers, both of wide-area and local-area systems agree.⁶⁷ As AMTECH explained above, PacTel can and, for the purposes of efficient use of the spectrum by all users, should make its system more robust. Provided that wide-area systems possess the ability to tolerate interference from low power operations, proponents of Part 15 devices need not fear being herded out of the band because of interference to higher priority users and amateurs will still find the band to be a useful resource for experimentation and public service.⁶⁸

⁶⁷ See, e.g., Comments of Mark IV at 14-15; Comments of Pinpoint at 27-28.

⁶⁸ Because amateurs can operate with up to 1500 watts on a narrow or wideband basis throughout much of the U.S. at 902-928 MHz, amateur radio licensees operating in a congested environment will need to use discretion and carefully plan certain operations. Only a record of callous disregard of secondary status in the band by amateurs would support further restriction. AMTECH believes it unlikely that such a record will develop given the adverse consequences it would engender and the good reputation of the amateur community.

III. THE REQUESTS OF RADIAN CORPORATION FOR AN
ALLOCATION FOR WIND PROFILERS IN THE 902-928 MHz

[REDACTED]

Petition to allow meaningful evaluation on this issue. In its reply, Radian failed to provide significant additional information about its operation,⁷² and the Commission wisely issued a Notice of Inquiry in order to find out more about the potential for interference from wind profiler operations at 915 MHz.⁷³

In contrast with the earlier response to Radian's Petition, the NOI generated a chorus of opposition from the AVM industry, echoing the sentiments of AMTECH.⁷⁴ For its part, Radian, in its NOI comments, continued to fail to provide sufficient information that demonstrated that it would not pose a significant interference threat to many AVM systems, particularly wide-area wideband systems that are not as able to tolerate co-channel signals as more robust local-area systems such as AMTECH's.⁷⁵

⁷² In fact, Radian responded critically to AMTECH, suggesting, without evidence, that AMTECH completely misunderstood the Petition for Rulemaking and the proposed operations. Radian stressed that it intended to use only 500 watts of power, not 50,000 watts as AMTECH -- according to Radian -- had thought. (AMTECH never suggested in its Comments that Radian would use 50,000 watts. The fact of the matter, as AMTECH pointed out, was that it was unclear from the Radian Petition under what power limits Radian proposed to operate.) However, in its reply, Radian proposed rules that would have allowed for the emission of energy in the *horizontal* direction of 10 watts EIRP (i.e., 500 watts into an antenna with 28 dBi gain yields 300,000 watts but sidelobe suppression of -45 dB would reduce this to above 10 watts), justifying AMTECH's concern. See Radian Reply and Supplement to Petition for Rulemaking, app. B at 2.

⁷³ Wind Profiler Radar Systems, 8 F.C.C. Rcd 2546 (1993) (Notice of Proposed Rulemaking and Notice of Inquiry) ("NOI").

⁷⁴ See, e.g., Comments of PacTel, ET Docket No. 93-59 (filed June 15, 1993); Comments of Mark IV, ET Docket No. 93-59 (filed June 15, 1993); Comments of Hughes, ET Docket No. 93-59 (filed June 15, 1993); Comments of Pinpoint, ET Docket No. 93-59 (filed June 15, 1993); Comments of

Inexplicably, Radian suggested that the responsibility fell on existing users of the band to demonstrate that wind profilers did present an unacceptable interference hazard, a difficult task, given the lack of information provided by Radian.

In its recent reply comments on the NOI, Radian finally has provided *some* additional information. These data confirmed that although Radian would operate with 500 watts power, its stations could emit up to 300,000 watts EIRP.⁷⁶ Even assuming that the suppression fencing proposed by Radian operated fully up to specifications, this could permit over 10 watts to be emitted in the horizontal direction.⁷⁷ Clearly, energy levels of this magnitude spread over a wideband could present a significant problem to some low-power, wideband wide-area AVM systems. PacTel, for example, operates its mobiles at 5 watts with an antenna gain of -6 dBi.

Furthermore, the wind profiler systems, unlike local-area systems such as AMTECH's in which the transmitting reader is canted *downward*, would be emitting upward. Moreover, Radian proposes portable operations, such that the location of the source of interference may be constantly changing, exacerbating the problem of interference to some AVM systems.⁷⁸ The threat of interference is made even greater

⁷⁵(...continued)

gain, AMTECH now believes the threat of interference to its systems is fairly remote provided that power in the horizontal direction is, in fact, limited to 10 watts.

⁷⁶ Reply Comments of Radian, ET Docket No. 93-59, at exh. A (filed July 15, 1993).

⁷⁷ *Id.* (Suppression level of fences equal to -45 dB from peak power).

⁷⁸ Radian contends that the threat of interference has been overstated because there have been no complaints of interference from its experimental operations. This ignores the facts that the deployment
(continued...)

because the pulse duration of the Radian systems are so short, on the order of hundreds of *nanoseconds*, that even with a duty cycle of 15 percent, the emissions would appear continuous to AVM systems using pulse durations of only a few microseconds.

In short, the Radian proposal promises considerable interference problems for certain types of AVM systems. Because the demand for non-governmental wind profiler radar systems has not been demonstrated beyond a couple of hints of interest,⁷⁹ there is even more reason for the Commission not to allow this proposal to delay the adoption of final AVM rules. Rather, the Commission should expeditiously implement a sharing band plan for AVM systems so as to promote the continued growth of AVM systems that are already providing important public benefits to substantial segments of the American public.

IV. AMTECH RESPONSES TO SPECIFIC OPERATIONAL AND TECHNICAL PROPOSALS.

In the comments, a number of operational and technical proposals meriting a response were made. Some of these were in response to rules proposed in the *NPRM*,

⁷⁸(...continued)

of AVM systems will expand dramatically following the adoption of final rules, as the interest of AVM system developers and existing and potential AVM users in this docket demonstrates, and that the experimental operations have rarely been at the same location as deployed wide-area AVM system, which are far more susceptible to interference from the wind profilers. Moreover, it is not clear that, where wind profiler stations have been deployed in the location of wide-area systems, e.g. Los Angeles, that they have been operating on overlapping frequencies. See Comments of Radian at 11-12.

⁷⁹ Reply Comments of North American Teletrac and Location Technologies ("PacTel"), ET Docket No. 93-59 at 4 (filed July 15, 1993).

while others were made on matters in addition to the rule proposals. AMTECH provides its replies to the principal of these suggestions below.

A. AVM and LMS Services Should Be Required to Provide Location.

Southwestern Bell Mobile Systems contends that the proposed rules, by making location a *sine qua non* of LMS services, unduly restricts the range of possible services.⁸⁰ Among those services that Southwestern Bell would like to see permissible are the monitoring of the status of fixed industrial appliances or the monitoring of vending machines inventories.⁸¹ AMTECH disagrees. Any communications performed by an LMS system should be incidental to and connected with the location of mobile units. Expanding the service to include communications among fixed units as a primary operation would not be consistent with the Part 90 Private Land Mobile regulatory structure generally and would unnecessarily clutter the band with what would effectively be an entirely new service. Moreover, the types of services to fixed units that Southwestern Bell describes could be performed through other means, such as through wireline connections.

⁸⁰ Comments of SBMS at 5.

⁸¹ *Id.* at 6.

B. Narrowband Forward-Links of Wide-Area Systems
Should Be at the Band Edges.

The record demonstrates the wisdom of putting the high-powered narrowband forward links associated with some wide-area systems at the edges of the 902-928 MHz band, as AMTECH proposed. Apart from PacTel, all proponents of wide-area systems suggested putting such links out of other systems' spectrum.⁸² These commenters all confirmed the extreme interference potential of such links. Accordingly, because the entire band should be shared between wide-area and local-area systems, narrowband forward links should be placed at the band edges, at 902.000-902.250 and 927.750-928.000 MHz, so as to present the smallest potential for interference to others.⁸³

C. Extended Implementation.

A number of commenters, including a spate of governmental agencies using or intending to use local-area AVM technologies, have suggested that extended implementation schedules be available for large projects that are phased in over a period of a year or longer.⁸⁴ Indeed, there is essentially no opposition to the

⁸² Comments of Pinpoint at 22; Comments of MobileVision at 44; Comments of Location Services at 5-6; Comments of SBMS at 15-16.

⁸³ Comments of AMTECH at 32; *accord* Comments of SBMS at 15; Comments of Pinpoint at 2; *see also* Comments of Location Services at 5.

⁸⁴ *See, e.g.,* Comments of the Port Authority of New York and New Jersey at 3-4; Comments of the IBTTA at 12; Comments of Mark IV at 14; Comments of Hughes at 15 (local governmental agencies will qualify for relief pursuant to Section 90.155 of the Commission's rules); Comments of the IAG at

suggestion that AVM systems should be able to qualify for extended implementation.⁸⁵

A particularly strong case has been made that longer construction schedules be extended as a matter of course to large systems being implemented by state and local governmental authorities. As the Interagency Group notes:

Government and quasi-governmental entities like the Interagency Group are not entrepreneurs spending private capital to fund profit-making ventures in pursuit of their own proprietary interest. Rather they are repositories of public trust and responsibilities, investing user fees into public services pursuant to political and legal mandates designed to promote and protect the public interest.⁸⁶

As such, governmental agencies should qualify for extended implementation periods for sufficiently large public projects according to the circumstances of the system at hand. Additionally, non-governmental projects of wide scope should also be deemed worth of longer construction periods under certain circumstances, as AMTECH proposed in the comments.

D. Co-channel Protection for Local-Area Systems.

Amtech notes that various proposals have been put forth for local-area systems to have limited geographic exclusivity. Mark IV has proposed a two mile radius of

⁸⁵ At the same time, the Commission should not freely grant such extensions. When the extensions have expired and stations remain unbuilt, the licensees should lose their authorization for facilities that remain unconstructed. In particular, AMTECH notes the need for firm enforcement of these principles with respect to PacTel and MobileVision who have over twelve hundred authorized sites but only six systems built, all PacTel's, almost five years after licenses were first granted.

⁸⁶ Comments of the IAG at 8-9.

co-channel separation; Hughes suggested 100 meters.⁸⁷ While local-area systems should be able to operate on a full period basis, AMTECH questions whether rigid mileage criteria for local-area systems would better serve the public interest than requiring mutual cooperation. In general, where less than one mile of co-channel separation is proposed among local-area licensees, AMTECH believes that the mutual cooperation obligations of Section 90.173 should obtain. Such an approach would

proposed as an alternative compliance measure a field strength measurement of 33 dBmV/m at 0.5 miles at two meters' height. AMTECH's proposed field strength limit at one half mile reflects the free space attenuation from a 30 watt signal while the Mark IV proposed limit at two miles is about 20 dB less than free space attenuation and thus contemplates that at two miles (approximately 3000 meters) there will be greater attenuation than would occur over an unobstructed path. In an urban area where sharing with wide area systems is most likely to occur, it is more likely that the attenuation at two miles would be in excess of free space attenuation. In relatively flat rural open areas, however, the attenuation at one-half mile could well approach that which would obtain in free space. In an effort to establish guidelines for reasonable mutual cooperation, the Mark IV field strength limits could prove to be a useful tool in urban environment.⁹²

Hughes proposes a power and height table predicated on 30 watts at 10 meters that provides decreasing power limits at greater height. AMTECH believes that this

⁹¹(...continued)

⁹¹ In AMTECH's alternative band plan, there would be quiet zones in the 906-910 and 920-924 MHz sub-bands, in which a lower power limit for local-area systems would apply. AMTECH looks forward to evaluating the responses to this counterproposal in the reply comments, both by local-area system developers, but also by the wide-area system proponents the quiet zones are intended to accommodate.

⁹² If the Mark IV field strength were applied in urban areas it may constrain the deployment of the systems designed to satisfy the beacon mode called for in a recent CALTRANS RFP. Nevertheless, system designers would have the option of using downward canted directional antennas and terrain and man-made shielding to reduce the field strength of the local-area signal outside of the coverage area.

limit and derating is generally appropriate, except that the highway beacon application noted in response to the CALTRANS RFP should be 100 watts ERP at 10 meters.⁹³

F. Grandfather Periods.

As AMTECH has discussed above, the entire 26 MHz band should be shared among local-area and wide-area systems. Accordingly, no grandfathering provisions are necessary.⁹⁴ However, should the Commission adopt some sort of segregative licensing regime, the forced migration of local-area systems should not be automatic, and should not be required for at least three years, as proposed in the *NPRM*. As the AAR notes, many of the existing local-area readers are in remote locations, unlikely to cause any interference to any wide-area systems that are likely to be constructed for quite some time.⁹⁵ Therefore, at most, migration should only be required in cases of *actual* harmful interference.⁹⁶

⁹³ In the sub-bands, 906-910 and 920-924, the proposed laws, power limited would be lower. See note 91, *supra*.

⁹⁴ Under AMTECH's alternative band plan, some grandfathering may be necessary to accommodate those local-area systems operating in the 906-910 and 920-924 MHz band at power limits greater than those proposed in that alternative plan. Such grandfathering should be indefinite, particularly as there are few such operations, and many are in rural areas.

⁹⁵ Comments of AAR at 8.

⁹⁶ The importance of requiring actual interference cannot be understated. As AMTECH has explained to the Commission on several occasions, PacTel and MobileVision have taken to opposing virtually all recent local-area licenses grants and applications on the grounds of interference. This has occurred several times even where such interference was impossible because the local-area system was to operate on different frequencies than the party seeking denial. See examples discussed in Comments of AMTECH at 16 n.31. Further, PacTel has complained of "interference" from AMTECH-equipped operations at the Los Angeles International Airport and the Dallas North Tollway on such frequencies at
(continued...)

In any event, the rate of wide-area system construction has been so measured to date that there is no reason to require migration to occur in any time shorter than three years, as some commenters propose.⁹⁷ The period required to select frequencies, prepare license modifications, have them processed, and to actually implement the transition in an orderly fashion in larger systems could easily take much longer than these parties suggest. This is not to say that wide-area systems cannot attempt to persuade local-area systems to migrate to different frequencies absent actual interference and in advance of the transition period's expiration.⁹⁸

G. Equipment Authorization of Non-Transmitting Tags.

At least one commenter, Hughes, appears to suggest that passive tags should be subject to a licensing requirement.⁹⁹ Although this proposal would provide for blanket licensing of local-area system mobile units where they do not transmit outside of the reading range of a local-area base station, AMTECH opposes this proposal.

⁹⁶(...continued)

904.010 and 911.990 MHz, even though PacTel, as it explains, is operating on 4 MHz centered at 908 MHz. Comments of PacTel at 24 n. 27; *see also* Response of PacTel to the Missile Group Old Crows, RM No. 8013, at 12 (filed Jan. 14, 1993). Thus, narrowband local-area operations on these "band-edge" frequencies could not be a source of interference. Nonetheless, PacTel has insisted on the modification of the Airport and Tollway licenses to different frequencies.

⁹⁷ *See, e.g.*, Comments of MobileVision at 32 (six months); Comments of PacTel at 21.

⁹⁸ In any situation of forced migration, it should be clear that the wide-area system would pay the emigrating local-area operators for the costs of transition.

⁹⁹ Comments of Hughes at 16. PacTel would have the FCC subject passive tags to equipment authorization. Comments of PacTel at 48. This proposal should be rejected largely for the same reasons as the licensing proposal of Hughes, as discussed in this section.

Passive tags do not transmit energy but merely reflect some of the energy from the reader's or base station's signal. Indeed, the tag reflections are on the order of 10,000 times, or 40 dB, weaker than the low-powered base stations. Moreover, there are many other devices in automobiles that scatter and modulate radio signals (*e.g.*, fans and certain types of lights.) Accordingly, because the passive tags do not in any way present any sort of an increased interference potential, they should not be subject to any equipment authorization procedure.

H. Frequency Tolerance.

In the *NPRM*, the FCC proposed that a maximum frequency tolerance standard is not necessary for local-area systems. AMTECH and several other AVM system developers agreed with this proposal.¹⁰⁰ PacTel proposes a limit of 2.5 ppm for all AVM systems, twice as stringent as the FCC's proposal for broadband wide-area systems, without stating the need therefore.¹⁰¹ If a standard is to be adopted, AMTECH believes, 5 ppm is sufficient for local-area systems, although the FCC should preserve the ability to impose more restrictive limits as particular circumstances require.

¹⁰⁰ See, *e.g.*, Comments of Hughes at 13; Comments of MobileVision at 49.

¹⁰¹ Comments of PacTel at 49.

I. Out-of-channel Limits.

The proposed rules attached to the Amtech Comments as Appendix C followed the *NPRM* and specified use of the $55 + 10 \log(P)$ dB formula for determining the out-of-channel suppression required for AVM transmitters. Various commenters proposed alternatives.¹⁰² The 902 - 928 MHz band is a noisy and congested band that will increasingly be populated by Part 15 devices that have no emissions suppression requirements within the band, but which are subject to a requirement that emissions must be suppressed outside of the 902 - 928 MHz band by 50 dB or not exceed the general Part 15 radiated limit.¹⁰³

If the Commission finds that some adjustment to the emissions limits within the band is appropriate, AMTECH recommends that the agency require suppression of spurious emissions within the 902 - 928 MHz band by 30 dB or to a power of 50 mW ERP outside of the authorized bandwidth, whichever is greater. The $55 + 10 \log(P)$ dB formula would then apply only to emissions at the edges of the 902 - 928 MHz band. In this way, the field strength of emissions falling within the low noise sub-bands proposed by AMTECH would not exceed the 50 mW limit at the center of each

¹⁰² See Comments of Mark IV at 12 ($30 + 10 \log(P)$ dB within the band); Comments of PacTel at 50 (99% of the energy to be in the authorized bandwidth within the 902-928 MHz band); Comments of MobileVision at 51 (a concept based on watts/Hz); and Comments of SBMS at 24-25 (first lobe suppression of 20 dB with successive lobes suppressed by steps increasing by 10 dB per step).

¹⁰³ See 47 C.F.R. § 15.249 (limits for non-spread spectrum communications devices in the band). Section 15.209, as applied by Section 15.249, specifies that out of band emissions may not exceed 200 uV/M at 3 meters. See also, 47 C.F.R. § 15.245 which establishes the same limits for out of band emissions from field disturbance sensors.

such sub-band. Nor would more conventional communications systems outside of the 902 - 928 MHz band be likely to suffer any adverse consequences.

J. Other Homes for AVM.

Some parties suggest that the FCC should allocate spectrum for AVM/LMS services outside of the 900 MHz band. Specifically, on the one hand, Lockheed Information Management Services proposes *additional AVM* spectrum at 5.8 GHz.¹⁰⁴ On the other hand, SAAB-Scania Combitech AB proposes the creation of a spectrum home for local-area AVM, specifically electronic toll and traffic management, at 2.45 GHz.¹⁰⁵

AMTECH does not oppose the allocation of spectrum for AVM in addition to 902-928 MHz, although that issue should not be taken up in this proceeding. Indeed, AMTECH is developing systems for use at other frequencies consistent with particular requirements, which in some cases, (*e.g.*, Australia, Canada, and Mexico) allow 902-928 MHz operations. However, the use of the proposed alternative frequencies in the United States present certain difficulties. For example, the 2.45 GHz band is allocated to Part 90 users generally and fixed operations and AVM operations would have to

¹⁰⁴ Comments of Lockheed at 4.

¹⁰⁵ Comments of SAAB at 10-11.

coordinate with them.¹⁰⁶ The 5.8 GHz band is not available for non-governmental radiolocation in this country.¹⁰⁷

Much more importantly, the AVM industry in this country has developed primarily in the 900 MHz band. Approximately half-a-million users rely on 900 MHz local-area systems already, and that number is likely to increase many-fold in the next few years as major local-area systems are implemented in California, the three largest states in the Northeast, and elsewhere. Furthermore, a host of major industry trade associations have endorsed the development of local-area systems at 902-928 MHz, including the AAR, ATA, ISO, ANSI, and IATA, and these projects are rapidly being realized. In addition, enhancements to 900 MHz AVM services take years to bring into reality and are under constant development. If this spectrum were suddenly no longer available, the industry in the U.S. would be set back for several years.

In short, the Commission should act now to open the entire 902-928 MHz band to all AVM systems now without foreclosing the possibility of considering an additional allocation for AVM services in other bands at some point in the future as demand in this country might require.

¹⁰⁶ 8 F.C.C. Rcd at 2505.

¹⁰⁷ 47 C.F.R. § 2.106 (1992).

K. Warning Language.

AMTECH agrees with Hughes that warning language as proposed in the *NPRM* is unnecessary for local-area systems.¹⁰⁸ These systems are unlikely to interfere or be interfered with government radiolocation stations. Similarly, ISM devices will not pose a realistic threat of interference to local-area stations so as to warrant a labeling requirement.

V. CONCLUSION.

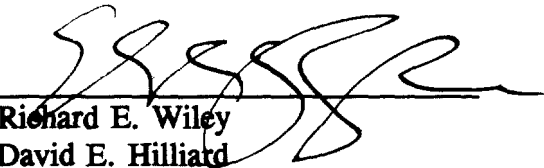
For the foregoing reasons, AMTECH submits that the Commission should make the entire 902-928 MHz band available to both local-area and wide-area AVM systems on a shared basis. In this way, the Commission will ensure the availability of sufficient spectrum to permit the achievement of the significant public interest benefits from local-area AVM technologies that have already begun to be realized across the nation. If the Commission pursues the alternative segregative approach and makes less than the full 26 MHz available to local-area systems, the growth of the industry will be slowed. Indeed, in those situations where local technologies can be most useful --

¹⁰⁸ See Comments of Hughes at 14-15.

where traffic and mobile resources management problems are most severe -- the public may largely be deprived of an important element in any solution to these vexing problems.

Respectfully submitted,

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July 29, 1993